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THE UNIVERSITY OF ALBERTA

AN INVESTIGATION OF TEACHERS' JUDGMENTS OF EDUCABLE
MENTALLY HANDICAPPED AND OTHER WEAK STUDENTS
IN ELEMENTARY CLASSES

by

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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "An Investigation of Teachers' Judgments of Educable Mentally Handicapped and Other Weak Students in Elementary Classes" submitted by Donald Walter Hepburn in partial fulfillment of the requirements for the degree of Master of Education.

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ABSTRACT

Mentally handicapped children have presented a serious problem to educators for many years. Since the end of the last century, special classes have been formed for the education of children in the "educable mentally handicapped" classification, frequently estimated to include two per cent or more of the school-age population. In the Edmonton Public School system, the proportion of pupils identified for placement in such special classes is less than one per cent of the total school enrolment. This fact suggested the possibility that teachers in the elementary grades were not referring all of the educable mentally handicapped pupils in their classes for special-class placement. It seemed possible that they were referring only those pupils who, in addition to academic weakness, exhibited some other characteristics which made their presence in the classroom undesirable. The present study attempted to discover what dimensions of judgment were used by elementary teachers to judge educable mentally handicapped and other academically weak students in their classes, and to determine whether or not there were significant differences between the teachers' judgments of the pupils identified as being educable mentally handicapped children and other weak students.

A review of the literature provided many descriptions of educable mentally handicapped children. From these descriptions a rating instrument was devised, consisting of thirty-two bi-polar adjective scales. Two groups of pupils (65 educable mentally handicapped pupils and 51 other weak students, all in regular elementary classrooms) made up the sample. Their teachers rated each of them on the rating instrument.

The ratings obtained in this manner were treated to determine the dimensions used in judging the pupils. Six principal factors emerged, three of which could be readily interpreted. They were identified as the Discipline, Introversion, and Appearance factors.

An examination of the scores on these three factors revealed, however, that the educable mentally handicapped pupils did not differ significantly from the other weak students. It was apparent that the teachers considered the pupils in the two groups to be essentially the same on these factors. A further examination of the scores on each of the thirty-two scales revealed significant differences between the two groups on only three scales, two of which referred to mental characteristics.

It was concluded that the teachers tend to consider educable mentally handicapped pupils as essentially the same as other weak students in most respects, but identify the former group on the basis of suspected mental defect. The suggestion, that the proportion of mentally handicapped pupils identified in Edmonton public schools was low because teachers identify only the ones who have undesirable characteristics in addition to poor academic performance, was not supported. The low incidence of known mental handicap must be accounted for in some other way. Several possible explanations were put forward. One of these was the suggestion that some types of mental handicap seem to be associated with poor economic and cultural conditions; Edmonton, being relatively free of economically and culturally deprived groups, may therefore have a lower incidence of mental handicap than do other less-favored areas.

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TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION TO THE PROBLEM	1
Background to the Problem	1
Degrees of Mental Retardation	2
The Incidence of Retardation	3
The Research Problem	5
II. RELATED LITERATURE	7
Teachers' Judgments	7
Descriptions of Mentally Retarded Children	10
Mental Characteristics	12
Physical Characteristics	17
Personality and Behavior Characteristics	21
Moral Characteristics	24
III. THE INVESTIGATION	27
The Hypotheses	27
Definition of Terms	28
Assumptions	30
Limitations	30
The Sample	32
The Rating Instrument	36
The Research Design	43
IV. THE RESULTS	46
Principal Component Factors	46

CHAPTER	PAGE
Factor Scores	49
Differences Between Groups	50
Interpretation of Factor Scores	52
V. CONCLUSIONS	56
BIBLIOGRAPHY	62
APPENDICES	
A: Instructions to Teachers of Pupils	66
B: Bi-Polar Adjective List	68
C: Mean Scales Scores and Standard Deviations for the Entire Sample	70
D: Inter-Scale Correlations	71
E: Factor Loadings for Each of Six Rotated Component Factors	72
F: Factor Scores for Each Individual on Factors 1, 2, and 3 With Mean Factor Scores and Standard Deviations . . .	73

LIST OF TABLES

TABLE	PAGE
I. The Growth of Special Classes for Educable Mentally Handicapped Children in Alberta Since 1925	2
II. Age At June 30, 1963, Sex, and Grade Placement of EMH Pupils in Group 1A	34
III. Age at June 30, 1963, Sex, and Grade Placement of Non-EMH Pupils in Group 1B	35
IV. Age at June 30, 1963, Sex, and Grade Placement of EMH Pupils in Group 2A	35
V. Age at June 30, 1963, Sex, and Grade Placement of Non-EMH Pupils in Group 2B	35
VI. Mean Chronological Ages of Boys and Girls in Groups 1A, 1B, 2A and 2B	36
VII. Values of the Six Largest Latent Roots	46
VIII. Scales with Highest Loadings for Each Rotated Principal Component Factor	48
IX. Mean Factor Scores and Standard Deviations for Groups 1A, 1B, 2A, 2B, A and B	50
X. Differences Between Means, Standard Errors of the Differences Between Mean, and Values of t on Each of Factors 1, 2, and 3 for Groups 1A and 1B, 2A and 2B, 1B and 2B and A and B	51
XI. Mean Scores, Standard Deviations, and Differences Between Means for Groups A and B on Each Scale in Factors 1, 2, 3 and 4 and On Five Selected "Mental" Scales	53

CHAPTER I

INTRODUCTION TO THE PROBLEM

I. BACKGROUND TO THE PROBLEM

Mentally handicapped children present a problem of considerable magnitude to educators, and probably have done so since the introduction of universal and compulsory education. Although the problem of retardation may have existed since the earliest times, it assumed new proportions when the law compelled all pupils to attend school, at least temporarily, whether they were capable of learning or not. During the nineteenth century, Itard, Sequin, Montessori, and others devoted considerable talent and effort to devising appropriate methods for instructing the mentally handicapped. Binet was commissioned to devise ways of predicting which children would be incapable of making normal progress in the public schools. In an effort to meet the needs of these handicapped children, various types of special classes and institutions were established.

In North America, the end of the last century saw the introduction of special classes within the public school system for the instruction of mentally handicapped pupils. According to Stevens (1954):

Providence, Rhode Island, established the first public school special classes in 1896. Other cities along the east coast began to emulate Providence, and shortly after 1900 the big cities of the Middle West had started their programmes. (p. 59).

The movement to form such classes spread rapidly and soon crossed the continent in both the United States and Canada. By 1918, special Opportunity Classes were introduced in Alberta. The number of these

classes, and the number of school systems providing them, has grown continuously since then, and has grown rapidly in the past decade. Table 1 shows the development of special classes for educable mentally handicapped pupils in Alberta since 1925, as indicated by the Annual Reports of the Department of Education.

TABLE I

THE GROWTH OF SPECIAL CLASSES FOR EDUCABLE MENTALLY HANDICAPPED CHILDREN IN ALBERTA SINCE 1925

	1925	1930	1935	1940	1945	1950	1955	1960	1963
Number of classes	5	7	8	14	12	14	19	52	81
Total Enrolment	81	111	139	231	183	223	270	665	1,124

II. DEGREES OF MENTAL RETARDATION

It is generally recognized that mental retardation exists in varying degrees, and attempts have been made to classify retardates in terms of their degree of defect. Kirk (1962, p. 16) has pointed out:

Varying terms have been used for different degrees of mental retardation. In general, mentally defective children have been classified in three categories from lowest to highest as follows:

<u>Lowest</u>	<u>Middle</u>	<u>Highest</u>
Idiot	Imbecile	Moron
Dependent	Semi-dependent	Marginal Independent
Untrainable	Trainable	Educable
Custodial	Severely Retarded	Educable
Low Grade	Middle Grade	High Grade
Very severe	Severe	Moderate
IQ 0-25	IQ 25-50	IQ 50-75.

To this list could have been added, under the third column, the British term "feeble-minded." Tredgold (1952, p. 163) has stated:

In the feeble-minded grade of defect, the I.Q. is usually regarded as falling between 45 to 50, which represents the upper level of imbecility, and 65 to 70, which roughly corresponds to the lower level of normality.

Of the three levels of mental defect, the third or least severe includes the largest number of persons. Gardner and Nisonger (1962, p. 22) have stated that "about 85 per cent of the total mentally retarded population can be classified as educable." Children with this degree of defect are the ones for whom special classes in the public school system have been most frequently provided. These children, the so-called educable mentally handicapped (or EMH) children, are the main concern of this study.

III. THE INCIDENCE OF RETARDATION

It is difficult to say what proportion of the school age population can be classified as educable mentally handicapped. Throughout this century, estimates of two per cent or even more have been common. In 1923, Goddard (1923, p. 44) reported that he was "convinced that the two percent is well within the mark." Davies (1930, p. 294) later observed that "most authorities agree that about two percent of the usual school enrolment are so mentally retarded as to require instruction in special classes." There were also about that time more conservative figures. Davies (1930, p. 294) referred to Wallin's writings, in which it had been suggested that "one-half of one percent would include all those who will eventually prove to be truly feeble-minded." Other conservative figures were based on actual observations. The Wood Report of 1929, referred to by Penrose (1934, p. 12), attempted to

enumerate the mental defectives in six areas in England, and failed to discover two per cent. The report stated, "The estimated average incidence was 8.57 per thousand individuals in the general population." In the United States shortly afterward, the White House Committee Report (Earl, 1961, p. 13) of 1933 stated, "Only a fraction, about 1/13, of those within the 60 to 85 I.Q. range have been demonstrated to be feeble-minded as that term is used in the standard definitions."

In spite of these more cautious figures, estimates of two per cent and more persisted. Pressey and Pressey (1935, p. 2) quoted a mental hygiene pamphlet of the early 1930's, "Mental deficiency makes it impossible for approximately two percent of the school population to carry on the work of even the lower grades." Ingram (1960, p. 11), in 1960, stated, "About two percent of the school population have definite mental limitations so extreme that their failure to succeed in school with average children is conspicuous." It is estimated by Mayo et al (1962, p. 6) in their report to the President of the United States, "About 26 out of every 1,000 children born will be mildly retarded at some time in their lives." The term "mildly retarded" is defined elsewhere in the same report as referring to "I.Q. usually 50-74 but sometimes including those of slightly higher I.Q." Finally, Gardner and Nisonger (1962, p. 6) have recently stated:

. . . Approximately three percent of the school population are found to be mentally retarded. . . the generally accepted prevalence figures by I.Q.'s are: I.Q. 50-75, 2.5 percent; I.Q. 25-50, 0.4 percent; and I.Q. below 25, 0.1 percent.

In contrast to these estimates of the incidence of mental retardation, the actual number of pupils accommodated in special classes

for the educable mentally handicapped is frequently closer to one per cent. In Alberta during the school year 1962-63, for example, just over 1,100 students were enrolled in such classes out of a total enrolment of approximately 315,000, or approximately 0.35 per cent of the total enrolment, according to information obtained from the Department of Education, Special Services Branch. This figure does not, of course, present a true picture because scattered population and other administrative problems make it difficult or impossible to establish special classes in many parts of the province. In cities such as Calgary and Edmonton, these problems are much less severe. Even in these centres, however, the proportion of pupils enrolled in classes for the mentally handicapped is less than two per cent. In 1962-63 in the Edmonton Public School System there was a total enrolment of about 50,000 pupils, of whom 300 were in "opportunity" classes for the mentally handicapped. Another 86 had been identified as suitable candidates for opportunity classes and were awaiting transfer. These 386 pupils represent only about 0.75 per cent of the total enrolment. That a similar situation exists in other centres across the country is indicated by Holt (1962, p. 45):

This figure does serve to indicate, however, that even in large centres of population, the number of pupils receiving special care in opportunity classes falls short of the estimated two percent of population by at least .8 percent and probably were all factors considered by a full one percent.

IV. THE RESEARCH PROBLEM

What is the reason for the discrepancy between the estimated prevalence of mental retardation and the actual enrolment in opportunity classes? There is a possibility that to a certain extent it can be

accounted for by a certain selectivity exercised by classroom teachers. A consideration of the procedure used in the Edmonton Public School System for identifying educable mentally handicapped children suggests the way in which this selectivity may operate. As a first step, a classroom teacher, through the principal of the school, refers a student who seems to her to be a likely candidate for an opportunity class to the Special Services Branch of the school system. A visiting teacher then interviews the child, makes a psychological assessment, studies the child's school history, discusses his or her progress and adjustment with the teacher, and then makes a recommendation concerning special-class placement. If placement in an opportunity class is recommended, then the permission of the parents is sought, and placement is effected when special-class space becomes available.

In this chain of events, it would seem that the initial referral is of considerable importance. There may be a substantial number of educable mentally handicapped children in regular classes who are not being referred to the Special Services Branch. If this is so, then the classroom teachers would seem to be exercising a certain selectivity which results in only some (perhaps only one-half) of the educable mentally handicapped children being referred.

If this is so, then it becomes important to know by what criteria the teachers make their selections. What are the dimensions by which teachers in regular classrooms judge dull pupils? In what ways do they view opportunity class children as being different from other weak students in their classes? The present study was designed to investigate these questions.

CHAPTER II

RELATED LITERATURE

I. TEACHERS' JUDGMENTS

In order to develop a rating device for use in the present study, the literature was searched for similar studies. Although there have been studies which have compared retarded and normal children on various characteristics, there have been few which made use of teachers' ratings of individual children on these characteristics.

Blatt (1958, pp. 810-818) compared the physical, personality, and academic status of mentally retarded children in two different educational settings, but did not compare their status to that of normal children except in regard to achievement in reading and arithmetic. Donovan (1958) tested 2,000 educable mentally retarded public school children of I.Q. range 50-74 to determine the incidence of defective speech. Kern and Pfeiffle (1962) studied the social adjustment of mentally retarded children in various educational settings, using an objective personal adjustment inventory completed by the students.

None of these studies, however, was concerned with teachers' judgments of mentally handicapped pupils. Kern and Pfeiffle (1962) referred to a study by Baldwin in 1958 in which teachers with such children in their classes were personally interviewed and asked to discuss the characteristics of the children. These interviews revealed that the most resented characteristic was anti-social behaviour. Kern

and Pfeiffer also observed that most attempts to compare the social adjustment of retardates in special classes with that of retardates in regular classes have usually employed some type of teachers' rating, but they did not specify the nature of the rating devices. They pointed out a weakness of studies of this sort, suggesting:

Any difference in the opinion of teachers about the social adjustment of the retardates may reflect merely the tendency of the special class teacher to be more accepting of retardates than regular classroom teachers. (p. 407).

Semmel (1959) explored the attitudes and information possessed by special and regular teachers with regard to mental deficiency, using an attitude-information inventory. Not surprisingly special teachers showed significantly greater knowledge of mental deficiency than regular teachers, but both groups showed an equally high positive attitude score. It may be argued that in Semmel's study, teachers were asked about their knowledge of and attitude toward generalized (and perhaps stereotyped) mental defectives, rather than specific mentally handicapped individuals. Guskin (1962), on the other hand, in two studies attempted to measure the effect of various information on the perception of mental deficiency in individual children. In the first of these, forty-five college students were asked to observe two mentally handicapped boys and two girls, in the high imbecile range of ability. Prior to the observation periods, different groups of observers were given different amounts and types of information about the children, and were then asked to observe them and rate them on a number of characteristics. In the second study, Guskin (1963) followed a similar procedure using 42 college students as observers and using film sequences for observation purposes. The

information provided to the observers prior to observation was different from that given in the first study. In both of these studies, Guskin used a bi-polar adjective rating scale. Observers were asked to rate the children on a five-point scale on each of several adjective pairs. In the first study, the following adjective pairs were used:

unpleasant - pleasant
 competent - incompetent
 cold - warm
 attractive - unattractive
 bright - dull
 helpless - capable
 normal - abnormal
 distractible - attentive
 skillful - clumsy
 impulsive - self-controlled
 good speaker - poor speaker
 neat - sloppy
 excitable - apathetic
 inactive - active
 silly - sensible

In the second study, the following pairs of adjectives were used:

likeable - unpleasant
 unattractive - attractive
 confident - timid
 ambitious - lazy
 strange - normal
 capable - helpless
 unintelligent - bright
 clumsy - skillful
 calm - nervous
 irresponsible - reliable
 happy - unhappy

In each of these studies, Guskin wished to determine the effect that various types of prior information had on a person's ability to perceive mentally subnormal children as being subnormal. In the first study, he found that telling the subjects that a child was mentally retarded had no influence on the perceived subnormality ratings. In the second, a similar finding was obtained, and Guskin concluded that

Perhaps labelling a child as mentally subnormal can influence his perceived subnormality only when two conditions are met: (1) the child himself also presents relevant cues to his subnormality but (2) these cues are still ambiguous in their implications. (Guskin, 1963).

Although Guskin's studies did make use of teachers' ratings, he did not attempt to determine from these ratings what teachers felt were the characteristics of retarded children. Instead, he stated in advance those traits which he felt to be characteristic of subnormal children and then examined the teachers' ratings to determine how closely they agreed with his standards. It is not clear what sources Guskin drew on for his adjective scales. His rating instruments are similar in form to the one used in the present study.

II. DESCRIPTIONS OF MENTALLY RETARDED CHILDREN

In order to develop a rating instrument for teachers to use in judging educable mentally handicapped and other poor students, it was thought to be advisable to review the literature for descriptions of the retarded. Therefore, a number of works appearing from early in the century up to the present time were surveyed, and the descriptions given were noted. These descriptions are discussed below.

Most recent authors in the field of mental retardation avoid giving descriptions of "the mentally retarded." The point of view expressed by Gardner and Nisonger (1962, p. 14) seems to be reflected in many of the more recent works; "Mental retardation is not a single etiological entity but may result from a great variety of causal factors. It is not a disease but a resultant condition." As a consequence, it is difficult to find lists of characteristics applicable to all or even

most mentally handicapped children. Most recent writers approach the matter of description in a more cautious manner. Jordan (1961, Chapter III), for example, describes them according to syndrome. It is true that a few writers, such as Levinson and Bigler (1960, p. 81), are prepared to make rather sweeping generalizations. "Many mentally retarded children have large and protruding ears," and "Mentally retarded children often have short foreheads," are examples of these. For the most part, however, statements such as these were more common in the first third of the present century than they are now.

There seem to have been two main approaches to the nature of retardation. On the one hand there were those who looked upon all children as having essentially the same abilities but in varying quantities. Hollingsworth (1921, p. 90) wrote, "The feeble-minded differ from ordinary children only in the amount of ability, not in the kinds of ability which they possess." Similarly, but somewhat later, Pressey and Pressey (1935, p. 224) wrote, "The feeble-minded are different in degree, not in kind, from the average individual."

On the other hand, some authors, including such important writers as Tredgold, held the opinion that mental deficiency was a degenerate condition afflicting only certain individuals, and afflicting them in varying degrees. To persons holding this point of view, feeble-mindedness was a mild form of idiocy. It was believed that idiots had definite characteristics, and that the feeble-minded had these characteristics also, but to a lesser degree. Tredgold (1952, p. 161) wrote:

. . .the majority (of feeble-minded) present more or less definite peculiarities which serve to distinguish them from the ordinary school child. Anatomical anomalies, or so-called stigmata of

degeneracy, are not usually as pronounced as in the lower grades of defect, they nevertheless occur. . . .

Goddard (1923, p. XVII) is particularly interesting in this respect:

The morons are the difficult class to recognize. . . . They look like normal children and to the uninitiated, often seem normal. . . . those who are familiar by long acquaintance with the feeble-minded are able to recognize them almost at a glance. Every superintendent of an institution can do this, and so can the other officers and teachers.

It is from writers holding this point of view that descriptions of the feeble-minded are most readily obtainable. These descriptions can be grouped under four main headings: mental characteristics, physical characteristics, personality and behavior characteristics, and moral characteristics. They will be considered below under these headings. Where possible, an attempt will be made to trace the references over the first half of this century and, in some instances, to refer to evidence based on carefully recorded observations.

Mental Characteristics

References to the mental ability of mentally handicapped children concerned such matters as judgment, the ability to acquire basic academic skills, attention span, memory, curiosity, imagination, ability to analyze, ability to use abstractions, and ability in speech and language.

The following characteristics were noted: (a) the mentally handicapped child lacks judgment and common sense. Goddard (1923, p. XV) stated, "He is lacking in reason or judgment or common sense." Tredgold (1952, p. 100) later made a similar observation: "In view of the various defects of the cognitive processes which have been described, it

13
necessarily results that the judgment and reasoning of infants are also defective." Again, he stated (1952, p. 163), "The chief characteristic of the feeble-minded child . . . is his lack of common sense."

(b) The mentally handicapped child is incapable of acquiring skill in the fundamental subjects. Bronner (1917, p. 197) admitted that there may be exceptions who should be provided for:

The belief seems quite general that all mental defectives are best fitted for handwork, that their main training should be in the sensory and perceptual fields. A certain amount of the 3 R's is added in case of those who seem capable of grasping such subjects.

Goddard (1923, p. 2), refers to a directive issued to principals of New York schools in which they were advised to watch for "the conspicuously backward children; those who apparently are unable to learn to read; those who have very deficient number sense. . . ." These were to be selected for classes for the feeble-minded.

(c) The mentally handicapped have a short attention span. Baker (1927, p. 4) observed, "We find that a low I.Q. signifies a pupil who must have materials presented in short and simple units. . . ." Levinson and Bigler (1960, p. 65), referred to the same characteristic, "Inability to concentrate in play, with books, etc., for any length of time is the next most constant symptom of mental retardation."

(d) Mentally handicapped children have poor memories. This characteristic was referred to by Pressey and Pressey (1935, p. 223), but seems to have been specifically referred to by few others. There has been some experimental evidence with regard to this attribute, however. Gallagher and Lucito (1961) examined the sub-test scores of groups of gifted, normal and mentally handicapped pupils on the Wechsler

Intelligence Scale for Children. They wrote:

Cohen (1957) described a third factor called memory, with high loadings on subtests Digit Span and Arithmetic which also appear as weaker subtests for the retarded samples. . . . The retarded subjects show a definite weakness in the area of stored information and short-range memory.

Thresher (1962) has also observed, "His attention span may or may not be short. In any event, he often has difficulty in remembering from day to day, or even from hour to hour what he has previously learned."

(e) Mentally handicapped children are not curious. This characteristic is noted by Tredgold (1952, p. 92): "The instinct of curiosity is seen to some extent or other in most aments above the grade of idioy. Usually, however, it is decidedly weak and fleeting. . . ."

(f) The mentally handicapped child lacks imagination. Again, Tredgold (1952, p. 99) is the source of this observation: "Imagination and inventiveness are also usually very poorly developed."

(g) The mentally handicapped child is unable to analyze. Baker (1927, p. 19) stated, "Inadequate powers of analysis and general reasoning ability are also marked in the case of dull pupils." This observation is echoed by Thresher (1962): "He is unable to differentiate unneeded from needed facts in verbal problem solving."

(h) He is better at concrete tasks than abstract ones. This characteristic was noted early by Hollingsworth (1921, p. 115): "They are better able to deal with things than with ideas." In fact, Goddard (1923, p. 12) was of the opinion that their training should consist primarily of concrete tasks: "Defectives can be taught to do manual work, the doing of which makes them happy and useful, and if this is done, they never miss the reading or writing." Baker (1927, p. 4), too,

observed that "the low I.Q. denotes work of a concrete nature." Much later, Hutt and Gibby (1958, p. 105) noted, "Moderately retarded children (I.Q. 50-65) do much better on tasks that demand motor co-ordination and control than they do on those that involve verbal facilities. The more concrete the task, the better they function." Cruikshank and Johnson (1958, p. 222) discussed a study by Costello (1941) in which the amounts of arithmetic learned under three different approaches--social, concrete, and abstract--were measured. Results of the study indicated that teaching with the use of abstraction is least effective. Finally, Gallagher and Lucito (1961) in their comparison of WISC subtest scores of gifted, average, and retarded subjects found the following:

A second factor. . .has to do with Perceptual Organization or Nonverbal Organization or Spatial-Perceptual Ability. . . .This factor receives its highest loadings on subtests Block Design, Object Assembly, and Picture Completion. The mentally retarded samples seem to be relatively strong on two of the subtests related to that factor. . . .The relative strength of the Perceptual Organization factor in the retarded indicates a superior capacity to use structured concrete visual materials.

(i) The mentally handicapped child is weak in language development. "In forming associations between words or ideas, the dull pupil is characteristically weak," according to Baker (1927, p. 19). Hutt and Gibby (1958, p. 106), much later, referred to the same defect:

Their vocabulary and range of intellectual interest are of course at a considerably lower level than those of average children, but they do respond to other persons and can express themselves in a limited manner.

Ingram (1960, p. 44) noted, "Concepts are not as highly developed; descriptive and expressive language is limited as compared with normal children of like mental age." Gallagher and Lucito (1961) concluded

as follows:

The factor identified most often is Verbal Comprehension which receives important loadings from subtests Information, Similarities, Comprehension, and Vocabulary. . . . The average sample and the retarded groups appear to be relatively poor on tests related to this factor.

All of these authors referred to the language ability of retarded children as a group. Harrison (1958) referred to a study by Schlanger (1957) in which the language development of retarded children of differing etiologies was considered:

In estimating the oral communication behavior of retardates, Schlanger concludes, one could surmise that the oral language of the Mongoloid would be least developed, while the Familial would be most like normal speakers. Greater variations in language abilities are most apt to be found among the organics because normal maturation of motor function, perceptual integration, and symbolization is often hampered by brain damage.

(j) Speech defects are common among the mentally handicapped. It seems likely that at least some writers considered speech defects to be a symptom of mental deficiency. Certainly they felt there was a close relationship. Pressey and Pressey (1935, p. 222) noted that "speech is especially likely to be defective," and Hutt and Gibby (1958, p. 106) observed that "speech difficulties of some kind are commonly found in all children in the group. . . the most frequent defect being that of articulation." Levinson and Bigler (1960, p. 67) stated, "It is no exaggeration to say that most mentally retarded children have some speech disturbance." Authors interested primarily in speech and language development, however, gave a somewhat different picture. Gens (1950) questioned whether or not speech defect is symptomatic of mental deficiency: ". . . since three out of four institutionalized, mentally defective persons are speech defective, there exists a misconception that a

severe speech disorder is a symptom of mental deficiency." The same author also wrote with regard to another study (1951):

On the basis of our present study we have not as yet found any type or pattern of speech that may be pathognomic of mental deficiency. . . . Each child was as different from his fellows as normal children from each other. . . . We did not find a direct relationship between speech proficiency and mental age.

With regard to the frequency of speech defect amongst the educable mentally handicapped, there is some evidence that it is less common than has been indicated above. Smith (1962) has reviewed the literature as follows:

General agreement has placed the incidence figure for speech problems at five per cent of all school children (Aimsworth 1958). . . . Hudson (1958) estimated a 12 per cent incidence of defective speech for the educable mentally retarded, and also stated that language development is generally retarded. Donovan (1957) tested 2,000 educable mentally retarded public school children of I.Q. range 50-74, and found only eight per cent with severe speech defects. Donovan also stated, however, that almost all of the group had developmental speech problems. Institutionalized populations gave higher incidence figures with Gens (1950) reporting 70-75 per cent; Bibey (1951) noting 66 per cent.

It can be seen that the evaluations of the mental abilities of the mentally handicapped children, while largely negative, are largely unsupported by experimental evidence. Where evidence is available (as in regard to speech defects) it does not entirely support the subjective evaluations. There is a need for more objective evidence.

Physical Characteristics

As has been pointed out earlier, writers early in the century tended to attribute to the feeble-minded many of the same characteristics that were attributed to the grossly defective, but in milder form. Physical defects most frequently noted referred to either outward appearance or body functions, and included references to stature, facial

features, motor control, health, sensory defects, and sensitivity to pain.

(a) The mentally handicapped are of smaller stature than the normal. Hollingsworth (1921, p. 133) observed:

. . . It is always found that the (feeble-minded) average shorter and lighter than (normal children) age for age. It is seen, moreover, that the differences increase with the increase in degree of mental defect.

Tredgold (1952, p. 161) also noted the same characteristic: "While there are numerous exceptions, it may be said that, as a rule, feeble-minded children are less both in stature and weight than the normal." Burt (1953, p. 51) concurred in this opinion, and offered an estimate of the prevalence of the characteristic: "A considerable proportion--nearly 70 per cent--of those who are educationally subnormal are subnormal in bodily development as well as in mental." It should be noted that Burt was referring to the educationally subnormal, a British classification which is inclusive of but not limited to the educable mentally handicapped. In contrast to these opinions, Ingram (1960, p. 40) noted more recently, "In respect to physical development and physical traits the mentally retarded on the whole closely resemble groups of average children of corresponding chronological age." Blatt's (1958) observation perhaps strikes a middle ground between these positions:

The consensus seems to indicate that there is a positive relationship between intelligence and various indices of physique. However, this relationship is not invariable, and appears to be too minor to be useful for predictive or educational purposes. This relationship does not appear to be linear, and may be more significant in the more severely retarded group.

(b) Mentally handicapped children have distinctive facial characteristics. Early writers were most prone to attribute facial defects to

this group, but some recent writers have repeated the early claims.

Pressey and Pressey (1935, p. 222) made the following statement:

The features are often assymetrical. Various special defects--the stigmata of degeneracy--are very likely to be found, such as V-shaped palate, malformed palate, crooked or notched teeth, protruding ears, strabismus or other eye trouble, harelip, malformed head, etc.

Hollingsworth (1921, p. 141) also noted that "a really good set of teeth is comparatively rare in mental defectives." Concerning the ears, Tredgold (1952, p. 131) commented, "Anomolies of the external ear are very common in the general population. . .they are still more frequent and of a more marked form in the mentally defective." Much more recently, Levinson and Bigler (1960, p. 67) wrote that "many mentally retarded children have large and protruding ears."

Concerning the lips, Tredgold (1952, p. 133) stated, "The lips are often thick, coarse, prominent, and unequal in size. The mouth is heavy and flabby-looking, generally open, and devoid of either refinement or firmness." Again, Levinson and Bigler (1960, p. 82) stated:

Mentally retarded children often keep their mouths open. This in turn may make the mouth dry. In contrast, many mentally retarded children have excessive drooling because they do not swallow the saliva normally.

Tredgold (1952, p. 133) also referred to a frequently "flattened or depressed nose" or alternatively to a "large and prominent" one, "with large fleshy nostrils that look forwards rather than downwards."

Levinson and Bigler also referred to the "short foreheads" mentioned earlier.

In contrast to all of these, Hutt and Gibby (1958, p. 111) stated, ". . .mildly and moderately retarded children do not usually have. . .special stigmata of degeneration." Unfortunately, there is

little research to support either point of view.

(c) Mentally handicapped children have poorer motor control than normal children. There are numerous references to this characteristic in the literature of which the following are representative: Hollingsworth (1921, p. 138): "In all tests of motor strength and control, the feeble-minded are inferior to the normal, on the average." Pressey and Pressey (1935, p. 222): "Physically, there is often a very labored awkwardness and inco-ordination in gait and in other movements; there is no grace or spontaneity of movement." Tredgold (1952, pp. 135-136): "Anomalies of movement are very prevalent in mental defectives of all grades," and "in persons suffering even the mildest degree of amentia, co-ordination is often acquired with difficulty, and remains imperfect." Slaughter (1960, p. 11) made a similar observation, but qualified it considerably:

The muscular control of a mentally retarded child is frequently below normal. . . . On the other hand, there are many retarded children, especially if they approach borderline intelligence, whose muscular co-ordination is apparently quite normal.

(d) Mentally handicapped children are susceptible to disease. According to Hollingsworth (1921, p. 18), "Disease easily originates among the unintelligent, and is spread by them broadcast." Tredgold (1952, p. 161) noted the same propensity for ill-health: ". . . the vitality and general metabolism of the feeble-minded child. . . are inferior to the normal, so that in these children there is a greater predisposition to ill-health and disease."

(e) Mentally handicapped children frequently have sensory defects. Penrose (1934, p. 15) stated, "Congenital cataracts is supposed to be

frequent in mongolism, but it may be found in defectives of other types." Tredgold (1952, p. 95) referred to defects in hearing:

Defects in hearing are fairly common in aments, and include complete deafness, tonal deafness, and word deafness. . . . Even where no actual deafness is present the acuity and range of auditory perception is usually below normal.

In contrast, Pressey and Pressey (1935, p. 223) noted that "there is little or nothing in the way of sensory defects."

(f) Sensitivity to pain. Penrose (1934, p. 15) claimed that "in mental deficiency. . . sensitivity to pain (both deep and superficial) is often very much blunted."

It can be seen that in regard to many of the physical attributes discussed above, there are conflicting opinions. Unfortunately, there is frequently inadequate evidence to support either point of view.

Personality and Behavior Characteristics

There are numerous references to the personality and behavior of the feeble-minded in the literature. Although it is difficult to group these, they may be said to refer most frequently to emotional intensity, irresponsibility, irritability, and indolence.

(a) Emotional intensity. Although Goddard (1923, p. xvii) claimed that "especially they are very affectionate," more frequently the mentally handicapped were said to be lacking in emotional intensity. Pressey and Pressey (1935, p. 222) wrote of this and Tredgold (1952, pp. 92-93) made reference to it also:

Although there are exceptions, relatively few defectives appear to be capable of very strong or lasting feelings of friendship or affection towards individuals.

On the whole, emotion is weaker in aments than in the normal. . .

29

the feeble-minded show evidence of shame, joy, awe, contempt, disgust, indignation, grief, and possibly other emotions; but in practically none of them do these emotions have the duration or reach the same intensity as in the normal.

(b) Irresponsibility. Pressey and Pressey (1935, p. 219) commented that the moron "is essentially irresponsible." Much more recently, Earl (1961, p. 91) wrote, "It is a common place amongst workers in institutions that subnormals are not only lacking in intelligence but show childishness in their behavior and in their attitude toward life." To some extent, this irresponsibility is reflected in reference to the retarded child's tendency to follow. In this regard, Tredgold (1952, p. 100) wrote, ". . . most aments are. . . weak in character and feeble in will. It follows that they are usually very amenable to suggestion and easily influenced by those about them." Hutt and Gibby (1958, p. 106) similarly observed, "In general, they are the followers rather than the leaders, and come to lean heavily on the group leader."

Perhaps related to this, Gunzburg (1958, p. 336) referred to their emotional instability, which, he said, "is very common, although, surprisingly, is seldom really severe in degree."

(c) Irritability. Several writers referred to the irritability and bad-temper of the mentally handicapped. Gunzburg (1958, p. 337) observed that "frustration tolerance tends to be poor." Goddard (1923, p. 2) stated that New York school principals were advised to watch for pupils who were "noticeably irritable, nervous children." Pressey and Pressey (1935, p. 222) referred to a "certain surliness," and to "a great vulgarity."

(d) Indolence. Several authors referred to a lack of capacity for "sustained voluntary effort." (Pressey and Pressey, 1935, p. 171.) While this may not be synonymous with indolence, the two attributes may be related. Earl (1961, p. 731) noted an "inability to strive toward a goal, to persist in effort." Cromwell (1961) suggested that:

. . . experiences of failure may be more prevalent among retarded children and may lead to passive avoidant behavior, lack of responsiveness to failure, and decreased effort in the face of failure.

Earlier writers were more inclined to consider this lack of sustained effort as inborn indolence. Penrose (1934, pp. 35 and 46) wrote, "Imbeciles and even higher grades are handicapped by their natural indolence," and later, "they invariably take the easiest course, which usually leads them into trouble. . . ." According to Pressey and Pressey (1935, p. 222), "Emotionally, the most persistent impression is of a rather apathetic, indifferent, listless temperament." Tredgold (1952, pp. 91 and 94) wrote of their "lack of ambition and desire, and . . . the paucity and feebleness of their interests." "Feebleness of drive and urge is a characteristic of most, and this feebleness is, on the whole, directly proportionate to the degree of their intellectual defect." Again he wrote, "Probably the majority of them are best described as phlegmatic, being apathetic, indifferent, and comparatively unexcitable."

While all of these writers attempted to attribute the same characteristics to all or most mentally handicapped children, Frankenstein (1958) clearly distinguished between several types, which collectively possess most of the characteristics referred to above:

We distinguish between the following four types of feeble-minded children: (1) the quiet, friendly, submissive, affectionate, and strongly imitative child, (2) the apathetic child, (3) the excitable, easily offended, resentful and aggressive child, and (4) the egocentric psychopath.

Moral Characteristics

The beginning of the present century saw a general public awakening of mental deficiency as a social problem. The moral aspects of that problem frequently assumed great importance. Davies and Ecob (1959, p. 3) have summarized the situation well:

What pictures from the literature of the past the very mention of the 'feeble-minded' conjures up! Menace to the progress of the race, root of social evils, burden of civilization--this was the way mental retardation used to be widely characterized. To no other form of human inadequacy have so many social blights been attributed: crime, delinquency, degeneracy, poverty, vagrancy, immorality, and their train.

The literature contains many references to discipline problems in school, delinquent behavior, criminality, and sexuality. Examples will be cited of each of these.

(a) Discipline problems in school. According to Hollingsworth (1921, p. 18), "The mentally defective child is frequently a disciplinary problem." New York principals, according to Goddard (1923, p. 2), were advised to pay close attention "to those who are truants or show a tendency to the habit; to those who seem incorrigible."

(b) Delinquency and criminality. Frankenstein (1958) made a distinction between these two terms: "Juvenile delinquents and wayward children are not comparable with adult criminals; the two clinical pictures of waywardness and criminality are essentially different." However, this distinction was not generally made by earlier writers. In

their view, feeble-mindedness led to delinquency in children and youth, and to more delinquency and criminality in adults. Hollingsworth (1921, pp. 18 and 35) wrote:

Psychologists working in penal institutions and courts have shown conclusively that crime and delinquency of all kinds are closely related to mental subnormality.

A very large proportion of delinquency among both children and adults is due to intellectual deficiency.

Goddard (1923, p. 12) supported this contention, "After they have left school. . . they are generally on the street, in juvenile court, or are sent to some institution." Pressey and Pressey (1935, pp. 2 and 220) quoted passages from a pamphlet entitled Mental Hygiene: The Practical Aims of a Movement to Conserve Mental Health, which appeared in the early 1930's. They include the following, "Feeble minds are responsible for nearly a third of crime, for much minor delinquency, and for the continued existence of many other social problems." The Presseys apparently shared this feeling, and commented:

As they grow older, they frequently become involved in delinquencies.

There may be sometimes a special lack of control, or a positive viciousness. Delinquency is then the prime symptom. Such cases chronically steal, tell falsehoods, perhaps are wantonly cruel, bully other children. . . . They play truant, live on the streets, run away from home and stay out nights, become vagrants. Very frequently they appear in juvenile court as "incorrigible."

(c) Sexuality. Penrose (1934, p. 18) suggested that sexual desire was not a problem, "In fact, the intensity of sexual desire seems to be roughly in proportion to the intelligence quotient." This is in contrast to the attitude of some earlier writers, including Pressey and Pressey (1935, p. 219): "The adult moron is a hulking man, with all the

capacity for criminal acts that this implies. He is different from the child emotionally and (most important of all) sexually." The strength, early in the century, of the eugenics movement and the move to establish custodial institutions would suggest that the weight of opinion favored the Pressey point of view.

In general, early references tend to attribute highly undesirable moral characteristics to the mentally handicapped and to see a causal relationship. More recent writers tend, on the other hand, to see immoral behavior as resulting from other causes, which may in turn be related to mental retardation in some instances.

The characteristics referred to in the present chapter were used in the preparation of the rating instrument, construction of which is discussed in the following chapter.

CHAPTER III

THE INVESTIGATION

1. THE HYPOTHESES

It has frequently been estimated that educable mentally handicapped children constitute between two and three per cent of the school-age population. The question was raised in Chapter I of why the number of children in Edmonton public schools who have been identified as educable mentally handicapped and assigned to special classes should constitute a proportion of the total enrolment which is considerably smaller than the estimated two or three per cent.

The suggestion was made that perhaps teachers in regular classes use dimensions other than intelligence in determining whether or not pupils should be referred for assessment and special class placement. The literature reviewed in Chapter II suggested that the dimensions used to judge educable mentally handicapped pupils might include physical, behavioral, and moral characteristics as well as mental characteristics.

The present study therefore attempted to answer two questions. First, are there a relatively small number of factors which constitute the dimensions by which teachers in elementary grades judge academically weak students? If so, what is the nature of each of these factors? Second, are there significant differences between educable mentally handicapped pupils and other weak students on the basis of these factors?

In order to answer these questions, it was necessary first of all to obtain the co-operation of teachers of regular elementary classes, each of whom had at least one known educable mentally handicapped pupil in his or her class. These teachers were asked to rate the educable mentally handicapped pupils and also an equal number of other academically weak pupils in their classes on a number of mental, physical, behavioral and moral characteristics. To facilitate the rating, it was necessary to design a rating instrument. This instrument, which is described in Section VI of this chapter, consists of thirty-two pairs of adjectives which are representative of the many characteristics frequently attributed to educable mentally handicapped children in the literature.

The two questions investigated by the study can be formulated as two hypotheses. The first hypothesis states that when teachers rate academically weak students on the rating device prepared for this study, a relatively small number of factors will emerge which will account for a substantial portion of the variance and which can therefore be said to represent the major dimensions by which teachers judge academically weak students.

The second hypothesis states that the ratings on these factors for educable mentally handicapped pupils will differ significantly from the ratings for other academically weak pupils.

II. DEFINITION OF TERMS

In the present study, several terms require definition. The first of these is the term "educable mentally handicapped" or, as it is

frequently abbreviated throughout the study, EMH. It refers to pupils with intelligence quotients, as measured by an individual test of intelligence administered by a competent psychometrist, in the range 50 to 80, who have been selected for placement in special classes.

Two other terms frequently used are "other weak students" and "next weakest student." The word "weak" in this sense means academically inadequate, or unable to achieve at a satisfactory rate or to a satisfactory level in academic subjects. Children referred to by these terms in the present study have not been referred by their teachers for assessment and placement in special classes, and therefore were not considered to be EMH pupils. They are referred to frequently throughout the study as non-EMH pupils.

Two other terms requiring definition refer to the rating instrument. The first of these is "scale." The rating instrument is in the form of a bi-polar adjective checklist, and each pair of adjectives in the checklist is referred to as a "scale." The term refers to a pair of adjectives thought to represent opposite ends of a continuum divided into seven segments, on which teachers are asked to rate some mental, physical, behavioral, or moral characteristic of a child.

The other term is "factor." It is hypothesized that several of the scales are so closely related that it will be found that a relatively small number of "factors" can adequately describe the data. A "factor" here refers to a cluster of scales, found to be closely associated with one another, which are believed to represent an important dimension used by teachers in judging weak pupils.

III. ASSUMPTIONS

Several assumptions are made for the purpose of this study, one concerning the pupils and two concerning the teachers. First, it is assumed that the educable mentally handicapped pupils in the study are representative of all the EMH pupils in the Edmonton public school system. These children were in regular classes rather than the special ones that accommodate the majority of the identified EMH pupils. However, they were in regular classes only because the special-class accommodation was inadequate, and not because they were felt by the school authorities to be different from EMH pupils already in special classes.

The second assumption is that teachers are able to make valid and stable judgments concerning the EMH and other weak pupils in their classes.

Finally, it is assumed that the teachers who participated in the study are representative of all elementary school teachers in the Edmonton public school system. That is, it is assumed that if the EMH and other weak pupils in the study had been enrolled in different regular classes with different teachers, the ratings obtained for the children would have been substantially the same.

IV. LIMITATIONS

There are certain considerations which limit the situations to which the findings of the present study can be applied. First, the study was conducted in Alberta, which is generally considered to be one

of the wealthier provinces of Canada. Average incomes tend to be higher here than in most other provinces, and there is a relatively small proportion of the population living in conditions of extreme deprivation. It has been suggested by many recent writers, including Mayo (1962), that many instances of mental handicap may be associated with physical deprivation and that this may be true particularly of children in the EMH classification. It may be that EMH pupils from deprived environments and EMH pupils from economically more satisfactory environments would have different characteristics. If this is so, then findings from a study conducted in a relatively wealthy region such as Alberta may not be applicable to less favored regions with many depressed areas.

A second consideration is that the study was conducted in an urban area. It is not known in precisely what ways rural children who are academically weak might differ from urban children, but it is possible that there are quite different influences working on rural children that would cause them to behave in a manner different from urban children. The results of the present study cannot therefore be applied to weak students in rural areas.

A third factor that must be considered is the existence of the Provincial Training School in Red Deer. This is a residential institution for the care and training of over 700 mentally defective children, operated by the Department of Health of the Government of Alberta. According to the Annual Report of that Department (Department of Health, 1961, p. 167) the total population of the Training School in 1961 was 718, of whom 196 or more than one-fourth were in the moron or educable mentally handicapped category. No doubt some of these children are from

Edmonton and would have been assessed as EMH pupils for special-class placement had they not been institutionalized. If they had been included in the sample used in the present study, they might have had an effect on the results, but the nature and extent of that effect cannot be determined. The absence of these children from the EMH population in the Edmonton public school system must be considered a limitation.

V. THE SAMPLE

The Edmonton Public School Board, through its special services branch, identifies a number of pupils each year for placement in special "opportunity" classes for educable mentally handicapped children. Placement cannot be effected immediately following identification because of a shortage of special-class facilities, and pupils must wait until September of the following school year when new special classes are opened. Therefore, during any school year, there are pupils in regular classes throughout the city who have been identified as being in the educable mentally handicapped classification and who are awaiting placement in an opportunity class. At the time the study was commenced in April of 1963, there were 86 such children in the school system. These children were to form the EMH group in this study. Their teachers were contacted and were asked to rate them on the rating instrument developed for this study.

A second group of pupils was selected by the same teachers. This group included pupils who were weak in school work but who had not been assessed as mentally handicapped. Two different sets of instructions

were given to the teachers. Fifty of the teachers were instructed to select "another student in your class whom you would select for opportunity class placement if you had to choose another." Thirty-six teachers were instructed to select "the next weakest student in your class." The instructions given to the teachers are shown in Appendix A.

A possible total of 172 pupils could have resulted from this procedure (i.e., 86 in the EMH group and 86 in the second group). However, the actual total was somewhat smaller for two reasons. First of all, during the school year twenty-one of the EMH pupils moved out of the school system and therefore could not be included in the study. Sixty-five EMH pupils were left, reducing the possible total for both groups to one hundred thirty.

The second reason concerned the method of selecting the second group. All those teachers who were instructed to select "the next weakest student" were able to make a selection (26 teachers). Of those who were instructed to select "another student. . .whom you would select for opportunity class placement," fourteen felt that there were no other such pupils in their classes. Twenty-five out of thirty-nine teachers were able to make a selection.

The actual total number of pupils included in the sample was one hundred sixteen. These were divided into the following four groups:

Group 1A - 26 EMH students

Group 1B - 26 "next weakest" students

Group 2A - 39 EMH students

Group 2B - 25 students considered by their teachers to be possible

candidates for opportunity classes.

The 65 EMH pupils were distributed throughout 44 elementary schools, or about one-half of the elementary schools in the Edmonton public school system. They were enrolled in 61 different classrooms. Intelligence had been assessed by the School Board's special services staff, using either the Revised Stanford-Binet or the Wechsler Intelligence Scale for Children. Intelligence quotients for the EMH children ranged from 40 to 83. The median intelligence quotient was 73.

Data concerning the chronological age, sex, and grade placement of both EMH and non-EMH pupils are given in Tables II, III, IV, V, and VI.

TABLE II

AGE AT JUNE 30, 1963, SEX, AND GRADE PLACEMENT OF EMH PUPILS IN GROUP 1A

Grade	Sex	Age 7	8	9	10	11	12	13	14	15	16	Totals	
		M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M	F
One		1-0	4-0	6-1	1-1							12	2
Two			1-0	1-0	2-1	0-1						4	2
Three						2-0						2	0
Four								1-0				1	0
Five								1-0				1	0
Six								1-0	1-0			2	0
Totals		1-0	5-0	7-1	3-2	2-1	0-0	3-0	1-0	0-0	0-0	22	4

TABLE III

AGE AT JUNE 30, 1963, SEX, AND GRADE PLACEMENT OF NON EMH PUPILS IN GROUP 1B

Grade	Age	7	8	9	10	11	12	13	14	15	16	Totals	
	Sex	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M	F
One		6-1	5-2									11	3
Two			1-0	4-0	0-1							5	1
Three					1-0	0-1						1	1
Four							0-1					0	1
Five								1-0				1	0
Six								1-0	0-1			1	1
Totals		6-1	6-2	4-0	1-1	0-1	0-1	2-0	0-1	0-0	0-0	19	7

TABLE IV

AGE AT JUNE 30, 1963, SEX, AND GRADE PLACEMENT OF EMH PUPILS IN GROUP 2A

Grade	Age	7	8	9	10	11	12	13	14	15	16	Totals	
	Sex	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M	F
One			4-2	3-2	2-1							9	5
Two			0-1	3-1	1-3	0-2						4	7
Three					0-3		1-2					1	5
Four							1-1	1-0				2	1
Five								1-1	1-1			2	2
Six											0-1	0	1
Totals		0-0	4-3	6-3	3-7	0-2	2-3	2-1	1-1	0-0	0-1	18	21

TABLE V

AGE AT JUNE 30, 1963, SEX, AND GRADE PLACEMENT OF NON EMH PUPILS IN GROUP 2B

Grade	Age	7	8	9	10	11	12	13	14	15	16	Totals	
	Sex	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	M	F
One		0-1	3-2	0-1								3	4
Two			2-1	4-1	1-1							7	3
Three				0-1	0-1	1-0						1	2
Four												0	0
Five						1-0	0-1	2-1				3	2
Six												0	0
Totals		0-1	5-3	4-3	1-2	2-0	0-1	2-1	0-0	0-0	0-0	14	11

TABLE VI

MEAN CHRONOLOGICAL AGES OF BOYS AND GIRLS IN GROUPS 1A, 1B, 2A, AND 2B

Group		N	Mean Chronological Age
1A	Boys	22	10 years 2 months
	Girls	4	10 years 7 months
	All	26	10 years 3 months
1B	Boys	19	9 years 0 months
	Girls	7	10 years 5 months
	All	26	9 years 5 months
2A	Boys	19	10 years 4 months
	Girls	20	11 years 1 month
	All	39	10 years 9 months
2B	Boys	14	10 years 0 months
	Girls	11	10 years 1 month
	All	25	10 years 6 months

These 116 students (65 EMH and 51 non-EMH pupils) constituted the sample rated by teachers on the rating instrument which is described in the following section.

VI. THE RATING INSTRUMENT

The measuring instrument used in this study was a rating device in the form of a bi-polar adjective checklist consisting of thirty-two scales. Each scale consisted of two adjectives to represent the extremes of a continuum, and the continuum was divided into seven segments. The teacher was asked to rate the pupil on each scale.

Adjectives for the checklist were derived from a variety of sources. The literature reviewed in Chapter II supplied many of them.

Several curriculum guides and government publications were also examined. These included the following:

- (a) Curriculum Guide for the Teaching of Educable Mentally Handicapped Children: Alberta Department of Education, 1959.
- (b) Curriculum Guide for the Educable Mentally Handicapped: State of Illinois Department of Public Instruction, 1958.
- (c) Handbook of Operations: The Special District for the Education and Training of Handicapped Children, St. Louis County, Missouri, 1961.
- (d) The Backward Child: Department of National Health and Welfare, Ottawa, 1949.
- (e) Curriculum Adjustments for the Mentally Retarded: U.S. Department of Health, Education and Welfare Bulletin, 1950, No. 2.

In addition, several general references in the field of exceptional children were consulted, including Frampton and Gall (1956), Baker (1959), Cruikshank and Johnson (1958), and Bowers et al (1960).

From all of these sources, over two hundred descriptive words and phrases were selected. Wherever possible, the phrases were replaced by single words of similar meaning. Where it was impossible to substitute a single word for a phrase, the phrase was omitted. In this way a list of approximately one hundred fifty descriptive words was prepared. These could be grouped under four main headings depending on their area of reference: (1) to mental characteristics; (2) to physical characteristics; (3) to personality and behavior characteristics; and (4) to moral characteristics. The list is presented below under those headings.

Physical

dwarfish
 unco-ordinated
 short
 stocky
 weak
 sickly
 untidy
 clean
 clumsy
 attractive
 neat
 tidy
 well-groomed
 awkward
 fatigued
 tone-deaf
 undernourished
 deaf
 stammering
 twitching
 poverty-stricken
 robust
 strong
 repulsive
 unkempt
 fastidious
 slovenly

Mental

curious
 observant
 alert
 forgetful
 inattentive
 capable
 slow
 concrete
 original
 dull
 imitative
 inartistic
 backward
 ignorant
 stupid
 practical
 intellectual
 feeble-minded
 brilliant
 distracted
 absorbed
 plodding
 illogical
 precise
 inexact
 inquisitive
 gullible
 stuporous
 lethargic

Behavior and Personality

placid
 happy
 restless
 grimacing
 mischievous
 interfering
 exhibitionist
 strident (voice)
 restive
 troublesome
 follower
 anti-social
 over-aggressive
 agitated
 noisy
 destructive
 polite

embarrassing
 overactive
 obedient
 hostile
 aggressive
 withdrawing
 submissive
 lazy
 critical
 moody
 foppish
 talkative
 quiet
 daredevil
 unmannerly
 non-conformist
 rude

Behavior and Personality, continued

insulting	affectionate
courteous	sullen
cruel	happy
sluggish	vivacious
high-strung	irritable
apathetic	balky
tearful	too-friendly
cautious	excitable
fearful	even-tempered
jealous	dejected
tense	mischievous
anxious	animated
suggestible	explosive
gracious	worrying
inert	easy-going
cheerful	carefree
affectionate	obstinate
good-tempered	yielding
unstable	servile
quarrelsome	angry
spiteful	maladjusted
quiet	stable
inconspicuous	indifferent
resolute	hyperkinetic
saucy	apprehensive
stubborn	ringleader

Moral

good	honest
criminal	irresponsible
cheating	

It was observed that many of the words had meanings that were quite similar to other words in the list, or that were opposite to other words in the list. By selecting one word to represent several with similar meanings, it was possible to reduce the length of the list considerably.

It was found also that some of the words had quite vague meanings, or could have a variety of connotations, and they were therefore not suitable for inclusion in the Checklist. As Osgood (1957,

p. 78) has pointed out, one of the criteria for selecting scales is "their semantic stability for the concepts and subjects in a particular study." Items with vague meanings or with several meanings could not be used. This tended to reduce the size of the list still further.

Osgood (1957, p. 79) has also pointed out that another criterion is "that scales should be linear between polar opposites and pass through the origin. . . .At present we merely assume that the scales defined by familiar and common opposites have these properties. . . ." It was found that some of the items referred to attributes that were dichotomous rather than continuous (for example, "tone-deaf" and "scratching"). Such items were omitted from the list.

In a few instances, several words had closely related meanings but no one of them would serve adequately for them all. In such instances, a new word (not on the list) was introduced to represent the concept.

Thus, by selecting one word to represent several synonyms, by removing some vague or ambiguous words, and by introducing some words to represent groups of closely related words, it was possible to develop a rating instrument consisting of 32 items. Since each item was to be in the form of a pair of opposite adjectives, it was necessary to find an antonym for each of the words selected. If a suitable antonym could be found in the list, it was used. If not, then one from outside the list was selected. Nunnally's (1959, p. 434) lists were useful in this regard. The 32 scales selected are listed below.

Mental

lethargic - curious

Physical

weak - strong

Mental

insensible - alert
 forgetful - mindful
 inattentive - absorbed
 illogical - systematic
 concrete - abstract
 dull - brilliant
 imitative - creative
 insensitive - perceptive

Physical

sickly - robust
 clumsy - graceful
 repulsive - attractive
 stammering - articulate
 slovenly - fastidious
 dirty - immaculate
 poor - rich

Behavior and Personality

explosive - placid
 troublesome - docile
 ringleader - follower
 withdrawing - outgoing
 defiant - submissive
 lazy - industrious
 rude - courteous
 cruel - kind
 sluggish - energetic
 boisterous - restrained
 sullen - cheerful
 tense - relaxed
 remote - intimate
 colorless - colorful

Moral

cheating - honest

These 32 scales were then placed in random order, both with regard to position in the list and with regard to polarity. Osgood (1957, p. 80) has pointed out, "The scales representing the same factor are alternated in polarity direction (fair - unfair but worthless - valuable) to prevent the formation of position preferences." The items were set out on a seven point scale. Reference is made again to Osgood (1957, p. 82): "Over a large number of different subjects in many experiments it has been found that with seven alternatives all of them tend to be used and with roughly, if not exactly, equal frequencies."

In this manner, the instrument in its final form was developed. The pairs of adjectives appear below in the order in which they were

presented in the rating scale. A copy of the rating scale appears in

Appendix B.

1. colorful - colorless
2. sickly - robust
3. lethargic - curious
4. follower - ringleader
5. slovenly - fastidious
6. concrete - abstract
7. rude - courteous
8. strong - weak
9. alert - insensible
10. honest - cheating
11. dirty - immaculate
12. creative - imitative
13. cruel - kind
14. attractive - repulsive
15. mindful - forgetful
16. remote - intimate
17. relaxed - tense
18. systematic - illogical
19. troublesome - docile
20. rich - poor
21. insensitive - perceptive
22. withdrawing - outgoing
23. clumsy - graceful
24. stammering - articulate
25. placid - explosive
26. sluggish - energetic
27. dull - brilliant
28. submissive - defiant
29. absorbed - inattentive
30. lazy - industrious
31. boisterous - restrained
32. cheerful - sullen

In preparation of this instrument, the literature was reviewed in an attempt to determine the traits commonly attributed to educable mentally handicapped children. A long list of adjectives was compiled, which was then reduced in length by eliminating adjectives very similar in meaning to others retained in the list. The final 32 scales were felt to be representative of the adjectives obtained from the literature.

VII. THE RESEARCH DESIGN

A copy of the rating instrument was sent to the teacher of each EMH pupil in the sample, together with another copy for the non-EMH pupil who was to be selected by the teacher in the manner described in Section V of this chapter. The teacher was instructed to complete one copy of the rating instrument for each pupil. The instructions given to the teachers are shown in Appendix A.

Each scale on the rating instrument offered the teacher seven possible positions along a continuum in which to record his or her judgments. In order to convert these judgments into numerical form, the positions were assigned values from one to seven. The position on the extreme left of the continuum for each scale was assigned a value of one; the position on the extreme right received a value of seven.

In order to determine the character of the judgmental space employed by the teachers, inter-scale correlations were found. These were then treated in the manner described by Householder (Bodewig, 1958, pp. 195-199). If the scales were representative of a few dimensions (fewer than the number of scales) this redundancy could be assessed by an examination of the latent roots of the correlation matrix. Associated with each root is an eigenvector. Each eigenvector forms an independent component required for the reproduction of the observed measures. By the selection of the largest roots and their associated vectors, a parsimonious description of the data was possible. Interpretation of each factor was made by noting the relationship between the scales and each vector.

In order to determine the loadings of each scale on each factor, the square root of each of the largest latent roots was multiplied by each element in its associated eigenvector by the formula $\lambda_i^{\frac{1}{2}}v_i$. By examining the variance for each principal component factor in relation to the total variance, it was possible to determine the relative importance of each factor. By examining the loadings for each scale on a factor, it was possible to determine the nature of the factor. A Varimax rotation (Kaiser, 1958) was carried out to give greater ease of interpretation. In this manner it was possible to determine the number and nature of the factors which accounted for a substantial portion of the variance.

Next, scores were obtained for each pupil on each of the principal factors, using the formula

$$F = (A^1 A)^{-1} A^1 Z$$

in which

F is the factor score

A is the rotated factor matrix

A^1 is A transpose

and

Z is the standardized score.

Then the mean factor scores were obtained for each of the four groups, and differences between means were determined. The significance of the difference between means was determined by the formulae given by Garrett (1958, pp. 214-215):

$$S_D = \frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}$$

and

$$t = \frac{D}{S_D}$$

in which

S_D is the standard error of the difference between the two sample means

s_1 is the standard deviation of the first sample

s_2 is the standard deviation of the second sample

N_1 and N_2 are the sizes of the two samples

and D is the difference between the two sample means.

In this case t was used with $(N_1 + N_2 - 2)$ degrees of freedom.

In this manner it was possible to determine whether or not there were significant differences between EMH and non-EMH pupils on the principal factors selected.

CHAPTER IV

THE RESULTS

I. PRINCIPAL COMPONENT FACTORS

For each of the completed rating instruments, numerical values were assigned to each judgment in the manner described in section VI of Chapter III. The mean scores and standard deviations for each scale for the entire sample of 116 pupils are given in Appendix C.

The next step in the analysis of the data was to find inter-scale correlations. These are given in Appendix D. Using these inter-scale correlations, latent roots and eigenvectors were obtained. The six largest latent roots were selected and arranged in order from greatest to least. Their values are given in Table VII.

TABLE VII
VALUES OF THE SIX LARGEST LATENT ROOTS

Latent Root	Value
1	5.9410
2	5.2912
3	2.5537
4	1.8460
5	1.5473
6	1.4154

The square root of each of these latent roots was then multiplied by each element in its associated eigenvector by the formula $\lambda_i^{\frac{1}{2}} V_i$ to obtain the factor loadings for each scale on each of the six principal

component factors. In order to give greater ease of interpretation, a Varimax rotation was carried out with the six component factors. The loadings for each scale on the rotated component factors are given in Appendix E. The scales bearing the highest loadings in each factor are shown in Table VIII, page 48.

If all the variance were accounted for by the six principal component factors, the total variance (sum of squares) would be 32. The data in Appendix E reveal that these factors actually accounted for a sum of squares of 18.182, or 56.9 per cent of the total variance. The percentages accounted for by each of the factors one through six were 14.7, 14.1, 8.4, 8.6, 6.1 and 4.9 respectively. The remaining portion of the variance (43.1 per cent) must be accounted for by a relatively large number of less important factors. The first hypothesis stated that a relatively small number of factors would emerge which would account for a substantial portion of the variance. Since the six principal component factors accounted for over half of the total variance, this first hypothesis can be accepted.

An examination of the scales in each factor led to a description of the factor. Factor 1 seemed to be related to behavioral and disciplinary characteristics, and is referred to as the Discipline Factor. Factor 2 seemed to refer to reserve or a tendency to keep to oneself, and is referred to as the Introversion Factor. The scales in Factor 3 seemed to be concerned with physical appearance, with the possible exception of scale 20, rich - poor. Even in this item, however, it seemed likely that the physical evidence of poverty would be important. The final scale, number 23, refers to motor control and

TABLE VIII

SCALES WITH HIGHEST LOADINGS FOR EACH ROTATED PRINCIPAL COMPONENT FACTOR

Factor	Scale Number	Description	Loading	h_j^2 *
1	19	troublesome - docile	0.836	.730
	28	submissive - defiant	-0.785	.677
	25	placid - explosive	-0.729	.682
	13	cruel - kind	0.696	.630
	7	rude - courteous	0.657	.659
	31	boisterous - restrained	0.577	.730
	10	honest - cheating	-0.511	.443
	30	lazy - industrious	0.534	.443
	15	mindful - forgetful	-0.502	.441
2	22	withdrawing - outgoing	-0.859	.801
	32	cheerful - sullen	0.776	.721
	26	sluggish - energetic	-0.718	.632
	16	remote - intimate	-0.707	.525
	31	boisterous - restrained	0.599	.730
	1	colorful - colorless	0.538	.445
	3	lethargic - curious	-0.533	.525
3	11	dirty - immaculate	0.738	.729
	14	attractive - repulsive	-0.736	.693
	5	slovenly - fastidious	0.621	.553
	20	rich - poor	-0.616	.440
	23	clumsy - graceful	0.501	.320
4	18	systematic - logical	0.706	.554
	21	insensitive - perceptive	-0.644	.514
	29	absorbed - inattentive	0.606	.520
5	8	strong - weak	-0.864	.813
	2	sickly - robust	0.631	.638
	6	concrete - abstract	0.542	.462
6	12	creative - imitative	-0.717	.570

*Communalities calculated over six factors.

co-ordination; the others all refer more to personal care and cleanliness. This Factor is therefore referred to as the Appearance Factor.

The scales in Factor 4 seemed to refer to mental characteristics, perhaps mental alertness, and the factor might be called the Intellectual Factor. However, since the number of items in the factor was small and the factor contributed relatively little to the total variance, this factor was not considered in the comparisons between the EMH and non-EMH groups. For the same reasons, and also because the nature of one factor was not entirely clear, Factors 5 and 6 were not used.

In summary, it was found that there were six principal component factors which together accounted for a substantial portion (56.9 per cent) of the variance, and the first hypothesis was sustained. Three of these component factors, accounting for 37.2 per cent of the total variance, were found to refer to discipline, introversion, and appearance. The remaining three factors were found to be difficult to interpret, and further investigation would be necessary before their nature could be determined.

II. FACTOR SCORES

Using each of the first three factors (Discipline, Introversion, and Appearance), the next step was to derive scores on each factor for each of the 116 pupils in the study. The factor scores for all individuals are given in Appendix F.

From these scores, it was possible to obtain mean factor scores

and standard deviations for each of the groups 1A, 1B, 2A and 2B, and also for the two larger groups A and B consisting respectively of groups 1A and 2A combined (i.e., all EMH pupils) and groups 1B and 2B combined (i.e., all non-EMH pupils). The means and standard deviations for each of these groups are given in Table IX.

TABLE IX
MEAN FACTOR SCORES AND STANDARD DEVIATIONS FOR
GROUPS 1A, 1B, 2A, 2B, A AND B

Group	N	Factor 1		Factor 2		Factor 3	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
1A	26	-.124	.720	-.128	.925	.207	.821
1B	26	-.090	.494	.085	.489	.067	.752
2A	39	.186	.910	-.108	.811	-.253	.898
2B	25	.032	1.006	-.184	1.025	-.322	1.011
A	65	.062	.850	-.058	.865	-.069	.895
B	51	-.030	.790	-.047	.809	-.124	.909

III. DIFFERENCES BETWEEN GROUPS

In order to determine whether or not there were any significant differences between group means on any of the three factors, significance was tested for using the formulae given by Garret (1958, pp. 214 and 215), as explained in Section VII of Chapter III.

Table X gives the differences between means for groups 1A and 1B, 2A and 2B, 1B and 2B, and A and B. It also gives the standard errors of the differences between means and the values of t . Since t

must reach or exceed 1.96 for significance at the .05 level of confidence, and 2.56 for significance at the .01 level of confidence, it appears that none of the differences between means is significant. Therefore the second hypothesis, that there would be significant differences between the ratings for EMH and non-EMH pupils on these factors, was not sustained.

TABLE X

DIFFERENCES BETWEEN MEANS, STANDARD ERRORS OF THE DIFFERENCES BETWEEN MEANS, AND VALUES OF t ON EACH OF FACTORS 1, 2 AND 3 FOR GROUPS 1A AND 1B, 2A AND 2B, 1B AND 2B, AND A AND B

Groups	D	Factor 1		D	Factor 2		D	Factor 3	
		S_D	t		S_D	t		S_D	t
1A and 1B	.034	.170	.200	.213	.205	1.039	.140	.219	.639
2A and 2B	.154	.247	.623	.076	.243	.313	.069	.249	.277
1B and 2B	.122	.222	.550	.269	.226	1.190	.389	.251	1.550
A and B	.092	.152	.605	.011	.159	.069	.055	.168	.327

Since it was found that there were no significant differences between mean factor scores for groups 1B and 2B, it was concluded that these two groups (i.e., all non-EMH pupils) could be reasonably treated as one group, i.e., Group B. Further comparisons were made, therefore, between Group A and Group B only, i.e., between EMH and all non-EMH pupils.

In a further attempt to determine whether or not any separation could be discerned between Groups A and B on the three factors, scatter diagrams were prepared. It was evident from an examination of these

that no separation between the groups could be discerned. This confirmed the finding that the second hypothesis was not sustained.

Although there were no significant differences between Groups A and B on any of the three factors, it seemed possible that the two groups may have differed significantly on one or more individual scales in each factor. Therefore the mean scores for each group on each of the scales in each factor were examined. They are shown in Table XI. So also are the mean scores for the scales in Factor 4 and for five "mental" scales which are discussed below.

IV. INTERPRETATION OF SCALE SCORES

It is interesting to note that both groups present a picture which is in some ways quite different from the picture frequently given in the earlier literature concerning the feeble-minded child. From an examination of mean scores on items in Factor 1, for example, we learn that children in both groups tend to be docile, submissive, placid, kind, courteous, restrained, honest, lazy and forgetful. It will be noted from the mean scores given in Table XI that most of the scores are fairly close to the midpoint of the scale (i.e., 4 on a 7-point scale). It will be noted also that the differences between the two groups are generally small. On only one scale, number 30: lazy - industrious, is the difference significant, at the five per cent level. It appears that EMH pupils (Group A) are judged to be less lazy and more industrious than the non-EMH pupils (Group B).

From Factor 2 we learn that children in both groups tend to be cheerful, sluggish, restrained, colorless, and lethargic. In addition,

TABLE XI

MEAN SCORES, STANDARD DEVIATIONS, AND DIFFERENCES BETWEEN MEANS FOR
GROUPS A AND B ON EACH SCALE IN FACTORS 1, 2, 3 AND 4
AND ON FIVE SELECTED "MENTAL SCALES"

Scale	Group A (EMH)		Group B (Non-EMH)		Difference
	Mean	S.D.	Mean	S.D.	
<u>Factor 1 - Discipline</u>					
19 troublesome - docile	4.86	1.97	4.52	1.66	.34
28 submissive - defiant	3.03	1.77	3.04	1.47	-.01
25 placid - explosive	3.32	1.79	3.35	1.37	-.03
13 cruel - kind	5.05	1.63	4.96	1.25	.09
7 rude - courteous	4.99	1.62	4.80	1.33	.19
31 boisterous - restrained	4.48	1.59	4.47	1.59	.01
10 honest - cheating	3.79	1.86	3.65	1.74	.14
30 lazy - industrious	3.51	1.46	3.00	1.31	.51*
15 mindful - forgetful	5.37	1.61	5.04	1.47	.33
<u>Factor 2 - Introversion</u>					
22 withdrawing - outgoing	3.77	1.73	4.10	1.60	-.33
32 cheerful - sullen	3.54	1.73	3.43	1.65	.11
26 sluggish - energetic	3.25	1.58	3.67	1.54	-.42
16 remote - intimate	3.77	1.65	4.18	1.42	-.41
31 boisterous - restrained	4.48	1.59	4.47	1.59	.01
1 colorful - colorless	4.71	1.58	4.28	1.52	.43
3 lethargic - curious	2.97	1.10	3.73	1.51	-.80**
<u>Factor 3 - Appearance</u>					
11 dirty- immaculate	4.62	1.59	4.08	1.61	.54
14 attractive - repulsive	3.62	1.27	3.47	1.14	.15
5 slovenly - fastidious	3.68	1.33	3.63	1.41	.05
20 rich - poor	4.74	1.26	4.71	1.13	.03
23 clumsy - graceful	3.59	1.38	3.51	1.32	.08
<u>Factor 4 - Intellectual</u>					
18 systematic - illogical	5.69	1.14	5.43	1.13	.26
21 insensitive - perceptive	3.06	1.24	3.31	1.31	-.25
29 absorbed - inattentive	5.45	1.23	5.18	1.44	.27
<u>Other "Mental" Scales</u>					
3 lethargic - curious	2.97	1.10	3.73	1.51	-.80**
6 concrete - abstract	3.62	1.98	3.53	1.47	.09
12 creative - imitative	5.77	1.44	5.37	1.51	.40
27 dull - bright	1.75	0.80	2.33	0.81	-.58**
29 absorbed - inattentive	5.45	1.23	5.18	1.44	.27

* Difference significant at the five per cent level.

** Difference significant at the one per cent level.

the non-EMH pupils tend slightly to be withdrawing and remote while the EMH pupils tend slightly to be outgoing and intimate. Neither of these differences is significant. However, the two groups do differ significantly on scale number 3: lethargic - curious. The EMH pupils were judged to be more lethargic and less curious than the non-EMH pupils. The difference is significant at the one per cent level.

From Factor 3 we learn that children in both groups tend to be immaculate and attractive, but slovenly, poor, and clumsy. None of the differences between the groups is significant.

From Factor 4 we learn that children in both groups tend to be illogical, insensitive, and inattentive, and that the differences between the groups are not significant.

In addition to the scores on the component scales for each factor, mean scores on five other scales (one of which, number 3, appeared in Factor 2) were examined. These were "mental" scales, which referred most directly to intellectual ability. The mean scores on these scales are also given in Table XI. It was found that the two groups differed significantly on two of these scales: number 3, lethargic - curious, and number 27, dull - bright. The Group A (EMH) pupils were said to be less curious and less bright than the Group B (non-EMH) pupils, and the differences were significant at the one per cent level.

From an examination of mean scores for Groups A and B, therefore, it can be concluded that both groups have been judged by their teachers to be somewhat different from the educable mentally handicapped pupils frequently described in the early literature. It can also be concluded that the two groups are generally alike, and that the principal factors

found in this study do not serve to distinguish the two groups. The second hypothesis therefore cannot be sustained. The two groups differ significantly on only three scales, two of which refer to intellectual ability.

CHAPTER V

CONCLUSIONS

The present study had two main concerns. First, it attempted to determine the main dimensions of teachers' judgments of educable mentally handicapped pupils and other academically weak pupils in elementary classes. Second, it attempted to discover whether or not the teachers saw the educable mentally handicapped pupils as being significantly different from the other weak students on the basis of these dimensions.

These questions arose out of the observation that in the Edmonton public school system the proportion of pupils identified as being in the educable mentally handicapped range of mental ability (about .75 per cent) was considerably less than the rate of incidence usually stated in the literature (two to three per cent). The suggestion was made that perhaps Edmonton teachers were referring for placement in special EMH classes only those pupils who were not only academically weak but who also exhibited other characteristics, perhaps of a physical, moral or disciplinary nature, which made them undesirable in the class. The study attempted to determine what these characteristics might be. A rating instrument was devised for the teachers to use in judging the EMH and other weak pupils.

The two major concerns were posed as two hypotheses. The first stated that a relatively small number of dimensions would emerge which would account for a substantial portion of the variance, and which would

therefore represent the main dimensions used by teachers in judging weak students. The second stated that the ratings for EMH pupils on these factors would differ significantly from those for the other weak students.

The first hypothesis was sustained. Six factors were found which accounted for a substantial portion of the variance. The nature of three of these was quite clear. The first factor, called the Discipline Factor, included the following scales: troublesome - docile, submissive - defiant, placid - explosive, cruel - kind, rude - courteous, boisterous - restrained, honest - cheating, lazy - industrious, mindful - forgetful.

The second factor, called the Introversion Factor, included the following scales: withdrawing - outgoing, cheerful - sullen, sluggish - energetic, remote - intimate, boisterous - restrained, colorful - colorless, lethargic - curious.

The third factor, referred to as the Appearance Factor, included the following scales: dirty - immaculate, attractive - repulsive, slovenly - fastidious, rich - poor, clumsy - graceful.

The second hypothesis had to be rejected. When mean scores on each of the first three factors for EMH and non-EMH pupils were compared, no significant differences were found. Apparently the factors represented dimensions used by the teachers to judge all weak students, not just the EMH students, and apparently they saw the two groups of students as being essentially the same on these factors. If they distinguish between the two types of pupil, it must be on some other basis. In an effort to determine what this basis might be, mean scores were compared on each scale in four principal component factors and also on

several other selected scales referring to mental characteristics. It was found that EMH and non-EMH pupils differed significantly on only three of the scales. Two of these were "mental" scales (lethargic - curious and dull - bright) suggesting that the teachers tend to distinguish between EMH and non-EMH pupils on the basis of mental characteristics.

An examination of the mean scores for EMH pupils on each scale in the Discipline, Introversion, and Appearance factors revealed a description of the educable mentally handicapped which was not entirely in agreement with the descriptions found in the early literature. Whereas the early literature contained many references to discipline problems in school, delinquent behavior, and criminality, scores on scales in the Discipline Factor suggested that the children in the present study tended to be well-behaved and submissive. Scores on scales in the Introversion Factor were in somewhat closer agreement with the early literature when they suggested that the children were colorless and lethargic. Scores on the scales in the Appearance Factor indicated that the children tended to be poor and clumsy, but clean and attractive. Pressey and Pressey (1935, p. 223), on the contrary, made the following observation:

The clumsiness already mentioned, with slovenly, indistinct speech, a heavy face with no expression, and ill-fitting and slovenly clothes on an awkward and poorly proportioned body, are all characteristics.

It can be concluded that EMH students in the present study tend to be judged by their teachers as similar to other academically weak pupils except perhaps in mental characteristics. The description of the

EMH pupils tends to be more favorable than were the descriptions in the early literature.

The suggestion that teachers may be exercising a certain selectivity on some basis other than mental ability and therefore limiting the number of identified EMH pupils by referring only the less desirable ones for special class placement does not seem to have been supported. The fact remains that the proportion of known EMH pupils in the Edmonton public school system is considerably lower than the common estimates of incidence. What are the reasons for this situation? Several possible reasons may be advanced.

The first concerns the number of schools from which the present sample was drawn. It was noted in Chapter III that the EMH pupils were enrolled in approximately one-half of all the elementary schools in the public school system. Apparently no pupils in the other half of the elementary schools had been identified as educable mentally handicapped and awaiting placement in special classes. It is possible that the teachers in these other schools do not make referrals of EMH pupils and that therefore many EMH pupils are in the school system who have not been identified. Similarly, it is possible that other teachers in the schools from which the sample was drawn may have neglected to refer EMH pupils in their classes. However, when one considers that special classes have been a part of the school system for many years and when one considers that teachers are generally concerned about weak students and are anxious to receive assistance for them if it is available, it seems unlikely that very many EMH pupils can have been completely overlooked.

Another possible reason concerns the Provincial Training School at Red Deer. As was pointed out in Chapter III, this institution enrolls approximately two hundred children in the educable mentally handicapped category. No doubt some of these children are from Edmonton and would be in the public school system had they not been sent to the Training School. However, even if one-third of the number were from Edmonton and this number was added to the 386 EMH pupils mentioned in Chapter III as being already identified, the total number of EMH pupils would only be approximately 450, or less than one per cent of the public school enrolment.

A third reason, and the one which seems most reasonable to the writer, may be that the estimates of incidence frequently cited in the literature may be unduly high for Edmonton. The possible relationship between economic and cultural deprivation and mental retardation was discussed in Chapter III. It may be that the generally high standard of living in Edmonton and the relative absence of economically and culturally disadvantaged groups in the population may result in a lower incidence of mental handicap than exists in other parts of the country or the continent.

In conclusion, it seems reasonable to say that teachers in elementary classes in the Edmonton Public School System tend to refer pupils for special class placement mainly on the basis of suspected mental handicap and not on the basis of some other, perhaps undesirable, physical or behavioral or moral characteristics. The proportion of pupils referred for special class placement is found to be lower than the estimates of incidence frequently cited in the literature. It seems

possible that the proportion may be lower not because of inadequate methods of identification but because the incidence of mental handicap in a relatively prosperous centre such as Edmonton may be lower than in less favored areas.

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APPENDICES

APPENDIX A

INSTRUCTIONS TO TEACHERS OF PUPILS

IN GROUPS 1A AND 1B

As you may know, the above-named student in your class is being considered for placement in a special "opportunity" class for slow-learning children. Your cooperation is asked in carrying out an approved study concerning children of this sort. You are asked to do the following things:

(1) On the "Bi-polar Adjective Checklist" bearing the student's name (Form A), please fill in the identifying data (Address, etc.,) about the student, and then rate the student on each of the 32 items on the checklist. You will notice that each item consists of a pair of opposites, with seven blanks in between. On each item, you are asked to rate the student somewhere between the two ends or extremes.

EXAMPLE:

heavy	<u>X</u>	_____	_____	_____	_____	_____	_____	light
funny	_____	_____	_____	_____	_____	_____	<u>X</u>	serious

Please be sure to give a rating on EVERY item.

(2) A second "Bi-Polar Adjective Checklist" (form B) has been provided without a name on it. You are asked to select the next weakest student in your class. Then put his or her name on the checklist and rate him or her on each item, in the same manner as you did the first student.

If there are any points about which you require further information or clarification, please call me at CA 9-3926 during the day, or 469-2953 in the evenings. The completed forms should be returned to your principal as soon as possible.

Your cooperation in this matter is greatly appreciated.

INSTRUCTIONS TO TEACHERS OF PUPILS

IN GROUPS 2A AND 2B

As you may know, the above-named student in your class is being considered for placement in a special "opportunity" class for slow-learning children. Your cooperation is asked in carrying out an approved study concerning children of this sort. You are asked to do the following things:

(1) On the "Bi-polar Adjective Checklist" bearing the student's name (Form A), please fill in the identifying data (address, etc.,) about the student, and then rate the student on each of the 32 items on the checklist. You will notice that each item consists of a pair of opposites, with seven blanks in between. On each item, you are asked to rate the student somewhere between the two ends or extremes.

EXAMPLE:

heavy	_____	<u> X </u>	_____	_____	_____	_____	_____	light
funny	_____	_____	_____	_____	_____	_____	<u> X </u>	serious

Please be sure to give a rating on EVERY item.

(2) A second "Bi-polar Adjective Checklist" (Form B) has been provided without a name on it. You are asked to name another student in your class whom you would select for opportunity class placement if you had to choose another. Then, put his or her name on the checklist and rate him or her on each item, in the same manner as you did the first student.

If there are any points about which you require further information or clarification, please call me at CA 9-93926 during the day, or 469-2953 in the evenings. The completed forms should be returned to your principal as soon as possible.

Your cooperation in this matter is greatly appreciated.

Form B

1. colorful							colorless
2. sickly							robust
3. lethargic							curious
4. follower							ringleader
5. slovenly							fastidious
6. concrete							abstract
7. rude							courteous
8. strong							weak
9. alert							insensible
10. honest							cheating
11. dirty							immaculate
12. creative							imitative
13. cruel							kind
14. attractive							repulsive
15. mindful							forgetful
16. remote							intimate
17. relaxed							tense
18. systematic							illogical
19. troublesome							docile
20. rich							poor

21. insensitive	_____	_____	_____	_____	_____	perceptive
22. withdrawing	_____	_____	_____	_____	_____	outgoing
23. clumsy	_____	_____	_____	_____	_____	graceful
24. stammering	_____	_____	_____	_____	_____	articulate
25. placid	_____	_____	_____	_____	_____	explosive
26. sluggish	_____	_____	_____	_____	_____	energetic
27. dull	_____	_____	_____	_____	_____	brilliant
28. submissive	_____	_____	_____	_____	_____	defiant
29. absorbed	_____	_____	_____	_____	_____	inattentive
30. lazy	_____	_____	_____	_____	_____	industrious
31. boisterous	_____	_____	_____	_____	_____	restrained
32. cheerful	_____	_____	_____	_____	_____	sullen

Name: _____ Address: _____

Birthday: _____ (day) _____ (month) _____ (year) Sex: _____

School: _____ Grade: _____ Teacher: _____

Father's Occupation: _____ Mother's Occupation: _____

APPENDIX C

MEAN SCALE SCORES AND STANDARD DEVIATIONS FOR THE ENTIRE SAMPLE

N = 116

Scale	Mean	Standard Deviation	Scale	Mean	Standard Deviation
1	4.517	1.567	17	3.957	1.788
2	4.379	1.585	18	5.578	1.138
3	3.302	1.347	19	4.716	1.847
4	2.612	1.419	20	4.724	1.200
5	3.655	1.365	21	3.172	1.275
6	3.578	1.777	22	3.914	1.684
7	4.905	1.503	23	3.552	1.354
8	4.095	1.692	24	3.750	1.591
9	4.879	1.314	25	3.336	1.619
10	3.724	1.808	26	3.431	1.577
11	4.379	1.617	27	2.009	0.856
12	5.595	1.485	28	3.034	1.645
13	5.009	1.477	29	5.328	1.331
14	3.552	1.220	30	3.284	1.419
15	5.224	1.560	31	4.474	1.589
16	3.948	1.569	32	3.491	1.694

APPENDIX D
INTER-SCALE CORRELATIONS

Scale No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32																																							
1	-.374	-.315	-.340	.051	.004	.248	-.287	.214	.090	.042	.068	.032	.256	-.069	-.294	.073	.011	.185	.048	-.068	-.453	-.061	-.169	-.334	-.406	-.431	-.268	-.044	-.101	.816	-.343																																							
2		.253	-.399	.037	.032	-.224	-.602	-.148	.061	.152	-.067	-.112	-.269	-.080	.185	-.140	-.031	-.146	-.092	.171	.498	.144	.188	.229	.229	.023	.023	.260	.015	-.021	-.246	-.220																																						
3			.467	.085	.071	-.126	-.088	-.389	-.068	.090	-.245	.025	-.316	-.069	.370	.016	-.204	-.146	-.092	.171	.498	.144	.188	.229	.229	.023	.023	.260	.015	-.021	-.246	-.220																																						
4				-.185	.062	-.381	-.498	-.164	.015	-.082	.283	-.167	-.145	-.031	.301	.027	-.053	-.328	-.027	.032	.394	.068	.067	.541	.371	.294	.382	.047	.159	.412	-.122	-.133																																						
5					.096	.270	.062	-.119	-.220	.614	.009	.207	-.321	.292	-.020	.068	.305	.197	.368	.272	.103	.196	.079	.127	.113	.062	.210	.241	.266	.210	.067	-.067																																						
6						.133	-.305	.207	.052	.161	-.019	.126	-.016	.078	-.162	.146	.061	.016	.172	.131	.113	.018	.057	.011	.069	.144	.026	.007	.036	.095	.020	-.020																																						
7							.275	.029	-.378	.416	.079	.583	-.178	-.223	.045	-.046	.265	.518	.124	.171	.163	.225	.210	.433	.146	.007	.524	.007	.036	.095	.020	-.020																																						
8								.001	-.065	-.060	.146	.179	.054	-.021	.021	.081	.012	.279	.098	.048	.048	.163	.145	.229	.190	.060	.007	.524	.007	.036	.095	.020	-.020																																					
9									.342	-.318	.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222	.222																																					
10											.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222	.222																																					
11																.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222																																	
12																													.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222																				
13																														.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222																			
14																															.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222																		
15																																.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222																	
16																																	.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222																
17																																		.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222															
18																																			.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222														
19																																				.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222													
20																																					.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222												
21																																						.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222											
22																																							.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222										
23																																								.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222									
24																																									.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222								
25																																										.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222							
26																																											.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222						
27																																												.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222					
28																																													.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222				
29																																														.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222			
30																																															.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222		
31																																																.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222	
32																																																	.071	.342	-.268	.334	.315	.066	.174	.434	.104	.335	.098	.114	.192	.267	.152	.127	.354	.220	.336	.366	.264	.222

APPENDIX E

FACTOR LOADINGS FOR EACH OF SIX ROTATED COMPONENT FACTORS

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	h_j^2
1	.242	.538	-.136	.019	-.214	-.178	.445
2	-.106	-.348	.194	.114	.631	.241	.638
3	-.154	-.533	.177	-.290	.015	.319	.525
4	-.344	-.379	-.085	-.185	.431	.437	.679
5	.153	.063	.621	-.310	-.050	-.200	.553
6	-.037	.219	.144	-.108	.542	-.293	.462
7	.657	.064	.256	-.102	.090	.321	.659
8	.200	.084	.019	.007	.864	.137	.813
9	-.075	.426	-.041	.496	.175	.244	.525
10	-.551	.289	-.131	.248	.057	.025	.443
11	.278	.073	.738	-.245	.141	-.148	.729
12	.062	-.094	-.085	.182	-.051	-.717	.570
13	.696	-.089	.254	-.011	-.014	-.025	.630
14	-.117	.313	-.736	-.049	-.024	-.192	.693
15	-.503	.056	-.031	.398	-.139	-.083	.441
16	.072	-.707	-.119	-.042	-.053	-.038	.525
17	-.216	.443	.074	-.402	-.129	.141	.446
18	-.203	.098	-.046	.706	-.046	.006	.554
19	.836	.067	.117	-.031	-.098	.030	.730
20	-.049	-.089	-.616	.181	-.132	-.035	.440
21	.055	-.073	.271	-.644	.031	-.127	.514
22	-.236	-.859	-.006	-.050	-.021	-.071	.801
23	.180	-.066	.501	.012	.044	.176	.320
24	.130	-.353	.233	-.186	.271	-.197	.343
25	-.730	-.321	.045	-.138	.067	.046	.682
26	-.056	-.718	.241	-.120	.129	.159	.632
27	-.135	-.129	.154	-.426	.105	.217	.299
28	-.786	-.084	-.086	.062	.192	.065	.677
29	-.319	-.029	-.058	.606	-.033	-.213	.520
30	.534	-.025	.135	-.357	-.043	-.064	.443
31	.577	.599	.188	.011	-.030	.039	.730
32	-.276	.776	-.006	.035	-.063	.192	.721
Sum of Squares	4.702	4.521	2.704	2.739	1.959	1.557	18.182

APPENDIX F

FACTOR SCORES FOR EACH INDIVIDUAL IN GROUPS 1A AND 1B
ON FACTORS 1, 2, AND 3, WITH MEAN FACTOR SCORES
AND STANDARD DEVIATIONS

Individual	Group 1A			Group 1B		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
1	.629	.848	.196	.265	.362	.436
2	-.061	-.952	.768	-.547	.988	2.167
3	-.314	.198	1.075	.190	.859	.834
4	-.537	-.023	.248	-.440	.876	1.120
5	.139	-.699	-.790	.716	1.002	-.250
6	.274	.321	.843	-.442	-.684	-.139
7	.365	-2.381	.051	-.562	.561	.109
8	-.112	.475	-.968	-.534	.032	-.475
9	-.440	-.484	.957	-.655	-.065	.764
10	.684	.194	1.490	.282	.083	-.485
11	.577	.308	-.052	.222	-.429	-.469
12	-.989	.721	-1.789	.254	-.153	-.208
13	-2.143	-.629	.722	-.734	-.410	-.759
14	-.643	.094	.009	.185	.093	.534
15	-.459	-.546	.850	.201	-.840	-.546
16	1.103	-2.158	1.094	.462	-.055	-.098
17	-1.332	.890	-.297	.178	.192	-.633
18	-.048	1.047	.231	.596	-.321	-.958
19	.664	-.427	1.156	.420	-.140	.981
20	-1.240	1.276	-1.549	-1.179	.209	1.104
21	.113	-1.161	-.248	.710	.433	-.965
22	.333	1.106	.034	-.757	.025	.974
23	.288	-.094	1.261	.175	.378	-.102
24	.401	-1.292	-.030	-.042	.266	-.054
25	-.554	.427	-.257	.326	.197	-.180
26	.087	-.375	.380	-.167	-.521	-.087
Mean	-.124	-.128	.207	-.090	.085	.067
S.D.	.720	.925	.821	.494	.489	.752

74

FACTOR SCORES FOR EACH INDIVIDUAL IN GROUPS 2A AND 2B
ON FACTORS 1, 2, AND 3, WITH MEAN FACTOR SCORES
AND STANDARD DEVIATIONS

Individual	Group 2A			Group 2B		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
1	.861	1.224	-.297	-.800	-1.388	-.436
2	1.666	.753	.833	-.195	.270	.308
3	1.429	-.905	-1.995	1.451	-.335	1.320
4	.917	-.344	-.415	-.381	-.726	-1.569
5	-.363	.249	-1.704	-1.700	-1.879	-1.463
6	-.415	-.892	1.447	.919	.983	-1.647
7	1.839	-.820	-1.470	.174	1.885	.201
8	.923	1.904	.911	-.889	-1.480	1.371
9	1.753	-1.277	-.523	-.196	.279	-.649
10	2.390	1.435	.338	1.137	1.092	-.694
11	.714	.813	.195	-1.846	-.027	-.558
12	-.043	.936	-.733	1.649	-.162	-1.105
13	-.516	.569	1.748	.373	-1.321	1.046
14	-.228	.668	-.637	-.267	.380	.657
15	-2.231	-1.158	-2.015	.038	-1.122	.488
16	.159	.624	-.401	-1.237	.304	.648
17	.804	1.467	1.252	-1.251	.865	-.596
18	-1.438	-.751	-.311	.189	.239	1.026
19	-.820	.268	-.838	.094	.545	-1.042
20	-.249	.406	.383	.484	.739	.230
21	.909	-.236	-1.124	.635	-.474	-.484
22	.084	-.070	-.653	-1.182	-1.391	-.938
23	1.278	-.983	-1.480	1.626	-2.205	-1.686
24	.613	-1.035	-.358	1.434	.825	-.365
25	.185	-.226	-.745	.539	-.495	-2.105
26	.147	-.490	-.436			
27	.009	.511	1.738			
28	-.461	.424	-.479			
29	.264	-.175	-.641			
30	-.661	-.199	-.427			
31	.181	-.124	.463			
32	.502	-.076	-.056			
33	.406	-1.426	-.479			
34	.430	-.045	-.092			
35	.171	.608	.028			

FACTOR SCORES FOR EACH INDIVIDUAL IN GROUPS 2A AND 2B
ON FACTORS 1, 2, AND 3, WITH MEAN FACTOR SCORES
AND STANDARD DEVIATIONS

Individual	Group 2A			Group 2B		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
36	.290	-.188	.272			
37	.090	-.368	-.257			
38	.556	-.152	-.846			
39	-.095	-1.343	-.068			
Mean	.186	-.108	-.253	.032	-.184	-.322
S. D.	.910	.811	.898	1.006	1.025	1.011

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